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Trimethyl(trifluorovinyl)silane

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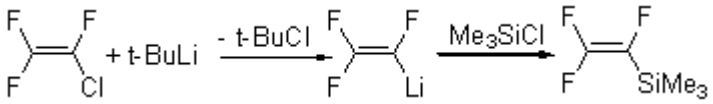

Trimethyl(trifluorovinyl)silane was prepared [1] without characterization details from bromotrifluoroethylene, which is not commercially available. The product was synthesized using several other reagents: chlorotrifluoroethylene, trifluoroethylene and various alkyl lithium compounds. An example of preparation is given here. Chlorotrifluoroethylene 3.8g (32.6 mmol) was vacuum transferred in a large storage tube over 50 ml distilled ether. t-BuLi/pentane 20 ml (32.6 mmol) was added dropwise under an argon atmosphere to the contents of the storage tube kept at -78°C. After 70 minutes addition of t-BuLi was completed and trimethylsilylchloride 3.54g (32.6 mmol) was added dropwise over a period of 1 h. The material was allowed to warm up slowly to room temperature for 7 h. Fractional distillation gave trimethyl(trifluorovinyl)silane as a colorless liquid (1.1g, 22% yield).

B.p. 65-66°C.

^{1}H NMR (200 MHz, neat): 0.23 (s, 3H).

^{13}C NMR (200 MHz, neat): -3.7 (s), 131.3 (ddd, *J* = 254.5, 67.1 and 2.8 Hz), 161.3 (ddd, *J*= 312.2, 271.6 and 33.6 Hz).

^{19}F NMR (200 MHz, neat, *vs*. $CFCl_3$): -88.8 (dd, J=70.9 and 25.4 Hz), -117.6 (dd, J=116.5 and 70.8 Hz), -198.6 (dd, J=116.4 and 25.2 Hz).

MS (EI, %): 154 (M^+, 12), 139 ($[M\text{-}CH_3]^+$, 21), 81 ($C_2F_3^+$, 100), 77 ($[Si(CH_3)_2F]^+$, 50), 74 ($[HSi(CH_3)_3]^+$, 45), 73 ($[Si(CH_3)_3]^+$, 19), 59 ($CSiF^+$, 41).

Reference

1. Tarrant, P.; Ward, W. H. *J. Org. Chem*. **1966**, *31*, 1143-1146.

Sample availability: sample is not available.